

## **3.15 TRAFFIC AND TRANSPORTATION**

### **3.15.1 Existing Conditions**

#### **3.15.1.1 Road Network**

Two kinds of roads are involved in constructing the Project: transporter routes and turbine site access roads. Transporter routes are roads used to bring in equipment, materials and manpower from outside of the Project study area to the Project site. Transporter routes include state, county, and city roads within the study area. Site access roads are newly constructed or improved gravel surfaced roads that run from the site access location on Vantage Highway to and between the individual turbines. These are described in Section 2.2.3 'Project Facilities'. There are currently two main transporter routes that will provide access to the site. Transporter routes were determined based on the most logical and direct routes to the site. Transporter Route 1 passes through the City of Kittitas. As described below, roads maintained by the City of Kittitas accommodate lower speed vehicles and are usually used for local residential or agricultural traffic. Therefore, Transporter Route 1 will likely be used for light duty traffic such as passenger vehicles, delivery trucks, and single-unit construction materials and equipment trucks. Transporter Route 2 extends further east and passes through Vantage. This route utilizes interstate and County highways and is better suited for larger vehicles because it does not pass through residential areas. Therefore, oversize and over length delivery vehicles will use Transporter Route 2. Exhibit 26, 'Project Site Surrounding Roadway Network,' depicts the Project Transporter Routes.

**Transporter Route 1** begins at the Port of Seattle and continues east along I-90, an interstate highway, to the City of Kittitas (Exit 115). The route then continues north on Main Street through the city, east on Patrick Avenue, north on No. 81 Road, and east on Vantage Highway to the Project site access location. I-90 varies between two- and five-lanes with 4- to 10-foot-wide paved shoulders and is classified as a rural-interstate with rolling terrain, according to the WSDOT road classification system, in the vicinity of the Project. I-90 has posted speed limits of 60 miles per hour (mph) in urban areas and 70 mph in rural areas. The 70 mph designation begins east of Issaquah.

From I-90, Main Street is the next leg on the transporter route. Main Street is maintained by the City of Kittitas and has a posted speed limit of 35 mph immediately north of the I-90 ramps. This speed limit is reduced to 25 mph as the roadway enters the industrial and commercial areas of the town. Main Street is a level two-lane, north-south, undivided roadway with 2- to 5-foot-wide unpaved/dirt shoulders for most of the length. There is also a designated bicycle lane on either side of the road through the industrial section of Kittitas. There is no parking along Main Street through this industrial section, but there is angled pull-in parking along the next section of the roadway through the city's retail area. Access to Main Street is unrestricted as there are many driveways and minor cross streets through the city. Main Street terminates at a T-intersection with Patrick Avenue, which is the next leg of the transporter route. Patrick Avenue is maintained by the City of Kittitas

and has a posted speed limit of 25 mph. This is a level two-lane, east-west, undivided roadway with designated paved bicycle lanes that are approximately 6 feet wide along either side of the road. There is no parking along Patrick Avenue, but access is fairly unrestricted as there are many driveways.

The next leg of this transporter route is No. 81 Road, which is classified as a rural major collector by Kittitas County and has a posted speed limit of 35 mph. This is a level two-lane, north-south, undivided roadway with unpaved, gravel shoulders approximately 1-2 feet wide. There is no designated parking along No. 81 Road and access to the roadway is unrestricted as there are many residential driveways. The intersections of Main Street and Patrick Avenue, and Patrick Avenue and Road No. 81 have very tight turning radii, which may prove difficult for large or lengthy vehicles. These roadways are mostly used by local or residential traffic. Vantage Highway is the final leg of this transporter route. Vantage Highway was once a state highway but has since become classified as a rural minor collector and is maintained by Kittitas County. This road has a posted speed limit of 50 mph and is a two-lane, east-west, undivided roadway with paved shoulders approximately 2 feet wide. There is no designated parking along Vantage Highway and there is minimal access to the roadway.

**Transporter Route 2** begins at the Port of Seattle and continues east along I-90, an interstate highway, to Vantage (Exit 136). The route then continues on Vantage Highway, which first heads north and then curves to the west to the Project site access location. The I-90 segment of this transporter route has the same characteristics as mentioned above. Vantage Highway is classified as a rural minor collector and is maintained by Kittitas County. This road has a posted speed limit of 35 mph within Vantage, but 50 mph outside of Vantage. This road is a two-lane, east-west, undivided roadway with paved shoulders less than 2' wide. There is no designated parking along Vantage Highway and there is minimal access to the roadway.

### **3.15.1.2 Traffic Patterns and Volumes**

Table 3.15.1-1 shows the average daily traffic (ADT) volumes on major roadways along each transporter route in the study area. These volumes are based on the most current available traffic data from WSDOT (2002 Annual Traffic Report), Kittitas County, and the City of Kittitas.

Kittitas County does not have historical traffic data for the roadways along the transporter routes, nor do they collect estimated truck percentages. Similarly, the City of Kittitas also does not collect historical data or estimated truck percentages.

<b>Table 3.15.1-1: Average Daily Traffic (ADT) Volumes and Estimated Percent Trucks</b>						
	<b>1998 ADT</b>	<b>1999 ADT</b>	<b>2000 ADT</b>	<b>2001 ADT</b>	<b>2002 ADT</b>	<b>Est. Truck %</b>
<b>Transporter Route 1</b>						
I-90 (West of Kittitas)	11,000	11,000	11,000	14,000	15,000	21
Main Street*	N/A	N/A	N/A	N/A	2,000	N/A
No 81 Road	N/A	N/A	N/A	N/A	1,300	N/A
Vantage Highway (West of site access)	N/A	N/A	N/A	N/A	1,146	N/A
<b>Transporter Route 2</b>						
I-90 (West of Vantage)	10,000	10,000	11,000	11,000	11,000	21
Vantage Highway (East of site access)	N/A	N/A	N/A	N/A	1,500	N/A

*ADT = Average daily traffic.*

*N/A = Not available.*

*\* ADT was collected in April 2003.*

*Sources: Washington State Department of Transportation. Kittitas County Public Works. City of Kittitas Staff.*

### 3.15.1.3 Truck Volumes and Routes, Weight and Load Limitations

The Kittitas County road network would comprise the primary public haul routes used in the construction of the Project. The regulatory framework for transportation in Kittitas County consists of program and project planning, design standards related to roadway geometry and paving materials, load limits for bridges, and weight limits or closures under defined circumstances. Kittitas County roads are designed to sets of standards with respect to paving materials and methods, and with respect to roadway geometry and design. Kittitas County Road Standards state the minimum requirements for public and private road construction in the County, as well as any exceptions to these standards. Where exceptions are noted, all new road and bridge construction must also be in accordance with the current edition of WSDOT's "Standard Specifications for Road, Bridge and Municipal Construction."

Kittitas County Code 10.28 "Seasonal Weight Restrictions" specifies load and weight restrictions on Kittitas County roads during load sensitive periods. These include any weather conditions that could affect traffic on County roads, such as ice, snow, fog, etc. It also authorizes the county engineer to issue emergency permits for the operation of vehicles exceeding the allowable gross load. Although the construction schedule may show tasks in the winter months, the majority of construction traffic is not anticipated to begin until seasonal conditions permit access to the higher elevations. These higher elevations are prevalent at the Project site, which will therefore limit the extent to which seasonal weather conditions affect construction traffic. It is not anticipated that seasonal traffic will have any effect on public use of the roadways utilized during Project construction because of the rural location of the Project site. However, if seasonal or holiday traffic or other special events (such as those that may occur at the Gorge) may possibly affect traffic, the issue will be addressed as necessary in the Traffic Management Plan, which will be prepared and submitted to EFSEC prior to Project construction.

The Revised Code of Washington (RCW) 46.44.090 “Special permits for oversize or overweight movements” allows special permits to be issued for vehicles exceeding the maximum size/weight/load limits, which are specified in the RCW sections listed below. The Applicant will implement special measures as specified within the permits.

- RCW 46.44.010 Outside width limit.
- RCW 46.44.020 Maximum height -- Impaired clearance signs.
- RCW 46.44.030 Maximum lengths.
- RCW 46.44.034 Maximum lengths -- Front and rear protrusions.
- RCW 46.44.041 Maximum gross weights -- Wheelbase and axle factors.
- RCW 46.44.042 Maximum gross weights -- Axle and tire factors.

From RCW 46.44.041, the maximum legal load is specified as 105,500 lbs. Because some construction transport vehicles related to the Wild Horse Project may exceed this weight limit, a special permit in accordance with RCW 46.44.090 will be obtained.

In addition, WSDOT requires permits for “superloads” (vehicles with a gross weight exceeding 200,000 lbs and/or a total width or height exceeding sixteen feet).

The expected weight of component delivery vehicles may be more than 200,000 lbs. A permit for these superloads must be submitted in writing, along with other requested information. Among the information requested are an explanation of why the move or transport is necessary, why the load cannot be divided into smaller loads, and a proposed route that is known to be adequate to accommodate this superload.

The transport of wind turbine components along state highways is necessary because there is no source for these highly-specialized components within close proximity to the Project site. The required materials and equipment must be shipped into the region from a larger metro area such as Seattle. The wind turbine blades and nacelles are manufactured as single units and cannot be divided. Many of the WTG vendors under consideration manufacture their components in Europe or Japan and would likely utilize the Port of Seattle (or another shipping port in Puget Sound) as an entry gateway. The proposed route for these superloads is along I-90, which is a state-maintained highway, and along Vantage Highway, which is a County-maintained road.

Along the segment of I-90 in which Transporter Route 1 and 2 overlap, there are two road restrictions in the westbound direction. There is a height restricted bridge on I-90 (Cle Elum River Bridge) and a height restricted snow shed west of Ellensburg. Because these are height restrictions in the westbound direction only, they are not anticipated to cause problems for loaded trucks carrying oversize equipment eastbound on I-90 to the Project site. In the eastbound direction there is a height restricted overpass at Exit 62 which is adequately signed. All loads over 14’0” are required to exit at the eastbound off-ramp and re-enter via the eastbound on-ramp. This is a standard diamond interchange and is not anticipated to cause any problems for trucks. Vehicles can easily exit and re-enter

I-90 to avoid the overpass. There are no other weight and load limits on any of the roads in the vicinity of the Project site.

The Kittitas School District surrounds the Project site. School bus stops along Vantage Highway are few in number and are adequately signed, so conflicts are not anticipated. In addition, stops along Vantage Highway can be made where adequate shoulders or private driveways are located, providing safety for children should construction traffic coincide with pick-up/drop-off times. School bus stops along No. 81 Road are also few in number and adequately signed. Buses making stops along this road are able to pull off the main roadway, providing children safety from traffic and allowing vehicles to pass. Because construction-related traffic is not anticipated to increase total truck volume along the highways by more than 15% over the current level and because this increase will be for a short period, it is not expected to cause problems for school bus service in the area.

Existing pavement conditions on Main Street, No. 81 Road and Vantage Highway will be videotaped as necessary prior to construction of the Project. This video log will be compared with the condition of the roadways after construction. If significant degradation in pavement condition is noted, the Applicant and Kittitas County or the City of Kittitas will attempt to determine responsible parties and will develop a plan for restoring the pavement to pre-Project conditions as recorded in the video log. The Applicant will be responsible for restorative work made necessary by the Project. The video log will be used to document pavement conditions in lieu of a pavement analysis.

#### **3.15.1.4 Existing Roadway and Intersection Levels of Service**

To analyze traffic conditions, average daily traffic data from WSDOT and Kittitas County were used to determine a level of service (LOS) for each of the roadways. LOS is a qualitative measure describing operational conditions in a traffic stream, and motorists' or passengers' perceptions of those conditions. A LOS definition generally describes these conditions in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. There are six LOS classifications, each given a letter designation from A to F.

LOS A represents the best operating conditions and LOS F represents the worst. An estimate of 10 percent of the ADT volume is used to determine the peak hour volumes for state highways. The city and County roads involved in the study area are rural, so a conservative estimate of 15 percent of the ADT volume is used to estimate the peak hour volumes for these roadways. Specific peak hour counts were estimated using this method, as opposed to collecting raw data, because of the low average daily volumes of the roadways in question. It is assumed that the low overall volumes would also mean low peak hour volumes, which would not adversely affect capacity.

LOS was determined on the basis of the most current Highway Capacity Manual (HCM) (Transportation Research Board, 2000). The ADT represents the estimated 2002 daily volumes in both directions of travel.

Existing Roadways LOS:

To determine the LOS for selected roadways in the study area, daily traffic capacity was determined by estimating capacities obtained from the HCM. Daily traffic volumes were compared with these capacities to determine volume-to-capacity ratios, which were used to calculate the existing LOS. Table 3.15.1-2 summarizes the existing roadway traffic conditions in the Project vicinity and includes existing roadway classification, number of lanes, daily volume, design capacity, peak-hour volume, and LOS.

<b>Table 3.15.1-2: 2002 Conditions of Affected Roadways</b>						
<b>Roadway</b>	<b>Classification</b>	<b>No. of Lanes</b>	<b>Average Daily Volume</b>	<b>Hourly Design Capacity<sup>(a)</sup></b>	<b>PM Peak Hour Volume<sup>(b)</sup></b>	<b>PM Peak Hour LOS</b>
<b>Transporter Route 1</b>						
I-90 (West of Kittitas)	Rural-Interstate	4	15,000	6,020	1,500	A
Main Street	City road	2	2,000	2,800	300	B
No 81 Road	Rural major collector (County Road)	2	1,300	2,800	195	A
Vantage Highway (West of site access)	Rural minor collector (County Road)	2	1,146	2,800	172	C
<b>Transporter Route 2</b>						
I-90 (West of Vantage)	Rural-Interstate	4	11,000	6,020	1,100	A
Vantage Highway (East of site access)	Rural minor collector (County Road)	2	1,500	2,800	225	C

a) Maximum number of vehicles per hour in both directions for LOS E.

b) Peak hour volumes estimated at 10% (for Interstate roads) and 15% (for city and County roads) of ADT.

LOS = Level of service.

The LOS for the current roadways surrounding the proposed Project site are (LOS) C or better. This LOS represents generally smooth traffic operating conditions with occasional delays. With LOS C, individual users feel generally unrestricted by the presence of others in the traffic stream.

Existing Intersections LOS

Major existing intersections along Transporter Route 1 include I-90 ramp termini at Exit 115 (to Kittitas), Main Street and Patrick Avenue, and also No. 81 Road and Vantage Highway. The only existing intersection on Transporter Route 2 is the I-90 ramp termini at Exit 136 (to Vantage). These intersections are all unsignalized.

WSDOT does not conduct individual counts at the ramp termini intersections because of the low volume. Kittitas County has not analyzed individual intersections since June 1996 according to the current Kittitas County comprehensive plan. Because the Project area is rural and without traffic signals, these intersections are expected to operate at LOS C or better during construction due to the low existing traffic on these roadways.

A 60/40 directional split was assumed for level of service calculations for the existing traffic scenarios. A conservative truck percentage of 10% was assumed for roadways in which actual truck data was not available.

### 3.15.1.5 Accident Rates

Accidents are generally expressed in terms of accident rate, where accident occurrence is indexed to the amount of traffic using a given roadway. For roadway segments, accident rates are computed as the number of accidents per million vehicle-miles (MVM) of travel. Table 3.15.1-3 shows an estimated number of accidents for the selected roadways based on multi-year accident rates. The most recent accident rates provided by WSDOT are from 2001. These 2001 accident rates were used to predict the number of accidents in 2002 along the transporter routes.

<b>Table 3.15.1-3: Accident Rates and Numbers, 2002</b>					
<b>Roadway</b>	<b>Milepost</b>	<b>Length (miles)</b>	<b>(a) Accident Rate (acc/MVM)</b>	<b>2002</b>	
				<b>ADT</b>	<b>No. of Accidents</b>
I-90 (West of Kittitas)	110.87	4.6	0.41	15,000	10
I-90 (West of Vantage)	115.47	20.96	0.84	11,000	71

*a) 2001 Multi-year accident rate. Rate is in accidents per million vehicle-miles. Source: Washington State Department of Transportation, 2003 (Accident Report). MVM = million vehicle-miles.*

The 1996 Accident Data on State Highways Report (WSDOT, 1996) indicates an average statewide accident rate of 0.86 accidents per MVM for the type of roadway corresponding to I-90 (Rural – interstate). The average statewide accident rate is higher than both I-90 segments analyzed. Therefore because of the low average daily traffic along these routes, and the low accident rate, there are no anticipated safety issues. WSDOT multi-year data is from 1996 because WSDOT has experienced “delays in implementing a new collision records system in the state” (WSDOT website April 7, 2003) and therefore, only the multi-year accident rate for 1996 can be compared.

Accident data was collected by Kittitas County along Vantage Highway. The number of accidents was recorded, but types of accidents and accident rates were not calculated by the County. Twenty accidents occurred within the 11 miles of Vantage Highway between No. 81 Road and the Project site access location (Transporter Route 1) in 2002. Six accidents occurred within the 10.2 miles of Vantage Highway between the Project site access location and Vantage. Because of the low average daily traffic along these routes, there are no anticipated safety issues.

Sight distance could be of concern along a few stretches of Vantage Highway near milepost 25 on Transporter Route 2 due to the winding geography and steep side slopes. Construction vehicles traveling on either Transporter Route 1 or 2 may encounter these types of issues, but they are not anticipated to cause problems. These areas are adequately signed, and construction traffic is expected to reduce their speed as they approach these areas. Due to extremely low average daily traffic volumes and reduced speed at these locations, the above roadways are not considered to have safety issues.

Sight distance at the Project site entrance intersection on Vantage Highway is not anticipated to be of concern. Two alternative site entrance locations were evaluated near the Rye Grass Landfill. The east entrance location (approximately 10 miles east of the City of Kittitas), which is an existing private road entrance onto Vantage Highway, has limited sight distance to and from the east due to winding geography and steep side slopes. It also has limited sight distance to and from the west due to a crest in the roadway. The west entrance location, which is located directly across the Rye Grass Landfill entrance approximately 100 yards west of the previously mentioned entrance location, does not have sight distance safety issues. At that location there are no crests in the roadway, winding geography, or steep side slopes to obstruct vision to the site entrance intersection. This intersection also has adequately widened shoulders that may be beneficial to vehicles turning into and out of the site. The Applicant proposes to use this west entrance location for these reasons.

#### **3.15.1.6 Future Plans and Projects**

Kittitas County Department of Public Works staff has stated that there are currently no construction projects planned on County roads in the Project area.

WSDOT has also been contacted and the following projects that may affect the transport and/or operations of the proposed Project have been identified:

- a) I-90: Gold Creek to Easton Hill paving project (MP 55.51 to MP 67.32). Scheduled for spring of 2004.
- b) I-90: Cle Elum Weigh Station roadway preparation project (MP 78.46 to MP 78.81). Scheduled for spring of 2005.
- c) I-90: Yakima River Bridge deck repair project (MP 78.81 to MP 78.85). Scheduled for 2006.



- d) I-90: Eastbound Cle Elum ramp paving project (MP 85.48 to MP 86.18). Scheduled for spring of 2004.
- e) I-90: Highline Canal to Elk Heights auxiliary lane project (MP 90.57 to MP 92.76). Scheduled for completion in July, 2004.
- f) I-90: Rye Grass Summit to Vantage auxiliary lane project (MP 125.21 to MP 136.11). Scheduled for completion in late Fall of 2004.

The paving project on I-90 between MP 55 and MP 67 is within the four lane section of the Interstate. Traffic control for this paving project will include lane closures restricting traffic to single lane movements eastbound and westbound. The paving is expected to occur only during daylight hours. Project-related heavy vehicles could potentially use these routes while they are under construction. The roadway preparation project and deck repair project at MP 78, as well as the ramp paving project between MP 85 to MP 86 are not anticipated to affect Project-related traffic but are mentioned here as they are on the transporter routes. The auxiliary lane projects between MP 90 and MP 92, and between MP 125 and MP 136 will be conducted adjacent to the travel lanes. These travel lanes can still be utilized; therefore adverse effects to Project-related traffic are not anticipated. The Traffic Management Plan will include coordination between Project-related construction traffic and these planned WSDOT construction projects.

The I-90- Rye Grass Summit to Vantage auxiliary lane project is in an area covered by Transporter Route 2 of the Project. There may be potential conflicts for construction vehicles in this area due to lane closures and/or reduced lane and shoulder widths related to the WSDOT project, if WSDOT has not completed construction before the Project components are delivered. Any conflicts will be discussed specifically with WSDOT and a Traffic Management Plan (as noted in Section 3.15.5 Mitigation Measures) will be prepared. This Traffic Management Plan will address any other planned County or WSDOT road construction projects that affect Project construction and operations, and include the use of additional signage, flaggers, and/or alternate route designations.

#### **3.15.1.7 Local Comprehensive Transportation Plans**

There are currently no plans for major improvements to roadways in use for the Project, or to the transportation system in Kittitas County. A review of the Kittitas County Comprehensive Plan identified no transportation goals, policies, or objectives that directly relate to the types of transportation impacts that may be caused by the Project.

WSDOT requirements are referenced throughout this section, however, it is anticipated that the Project construction and operation will fully comply with relevant WSDOT plans and goals by developing a comprehensive Traffic Management Plan in consultation with appropriate experts and regulators, and by obtaining and complying with all provisions of necessary permits.

#### **3.15.1.8 Public Transportation**

Kittitas County is primarily a rural county where the need for public transportation in or near its towns is not a high priority. The City of Kittitas and the Vantage area, near the vicinity of the Project site, currently do not have public transit systems. However, there is an accessible/special needs transportation program provided by the Kittitas County Action Council (KCAC) for citizens. Besides this service, Greyhound bus service and taxi-cab services are the main form of transit between cities within the County.

#### **3.15.1.9 Air Traffic**

There are no regional or municipal airports in the vicinity of the Project site. The nearest airport is Kittitas County Airport (Bowers Field), approximately 1.5 miles north of the City of Ellensburg. The Kittitas County Airport (Bowers Field) does not have scheduled air service, but is limited to private and charter plane service. Small planes may use private runways at ranches or farms in the area, but none have been identified in the immediate vicinity of the Project and the frequency of this type of use is unknown. None of the equipment or materials necessary for the Project operations or construction will be transported by air to the Project site.

#### **3.15.1.10 Rail Traffic**

Burlington Northern operates an active main line between Auburn and Tri-Cities over Stampede Pass, passing through Ellensburg. Portions of the line had been inactive until 1996, when the pass portion reopened to freight traffic. Approximately 4-10 trains traverse the route daily. It is not anticipated that any of the equipment or materials necessary for the Project operations or construction will be transported by rail to the Project site and therefore there will be no rail traffic burden impacts.

#### **3.15.1.11 Waterborne Traffic**

Over 100 miles southeast of the Project site, the Ports of Pasco, Benton, and Kennewick operate on the Columbia River. Grain is the major commodity using barge transportation on this stretch of the river. It is not anticipated that any of the equipment or materials necessary for the Project operations or construction will be transported by barge or ship up the Columbia River; therefore, there will be no impact to barge or river vessel traffic.

Depending on the final WTG vendor selected, it is possible that Project equipment and components would be transported through the Port of Seattle, Tacoma, or other Puget Sound port authority. Project equipment would likely be containerized and Project components would likely be shipped as a project cargo. These arrangements will be finalized following WTG vendor negotiations.

### **3.15.2 Impacts of the Proposed Action**

On the basis of historical ADT levels on I-90, a 1 percent growth factor is assumed in establishing impacts on future background levels of traffic. This growth factor is

considered reasonable because of the area's rural nature, and because of the historical volume trends presented in Table 3.15.1-1.

Local policies are aimed at keeping the public road service at or above an accepted level of service determined by the County. Roadways that will experience heavy truck traffic can be assessed on an individual basis by the County during the Project. All of the roadways in the study boundaries currently provide LOS C or better.

Table 3.15.2-1 describes the existing and future daily peak-hour traffic volumes and LOS values without any construction traffic impacts. It is estimated that during the peak hour in 2004, all roadways in the Project vicinity will function at LOS C or better, without the Project. An estimate of 10 percent of the ADT volume is used to determine the peak hour volumes for state highways. The city and county roads involved in the study area are rural so a conservative estimate of 15 percent of the ADT volume is used to estimate the peak hour volumes for these roadways.

<b>Table 3.15.2-1: Existing, Future Daily, and Peak-Hour Traffic Volumes and LOS without Project</b>							
<b>Roadway</b>	<b>No. of Lanes</b>	<b>Existing Daily</b>		<b>Estimated Peak Hour without Project</b>			
		<b>2002</b>	<b>2004</b>	<b>2002</b>	<b>LOS</b>	<b>2004</b>	<b>LOS</b>
<b>Transporter Route 1</b>							
I-90 (West of Kittitas)	4	15,000	15,300	1,500	A	1,530	A
Main Street	2	2,000	2,040	300	B	306	B
No 81 Road	2	1,300	1,326	195	A	199	A
Vantage Highway (West of site access)	2	1,146	1,169	172	C	175	C
<b>Transporter Route 2</b>							
I-90 (West of Vantage)	4	11,000	11,220	1,100	A	1,122	A
Vantage Highway (East of site access)	2	1,500	1,530	225	C	230	C

*LOS = Level of service.*

*Source: Washington State Department of Transportation, 2002.*

### 3.15.2.1 Construction

The Applicant will construct a road system on the Project site, with site access roads linking turbines along turbine strings and also linking turbines strings to the planned accessway from Vantage Highway. The accessway off of Vantage Highway will be constructed with the required slopes and culverts according to WSDOT and Washington State access management under Title 468 Washington Administrative Code (WAC) and Chapter 47.50 Revised Code of Washington (RCW).

Construction materials and equipment are assumed to be originating from the west of the Project (see Section 3.15.1.3 for an explanation of why this traffic is likely to travel from the west). Project construction traffic management will fully comply with applicable

regulations and a comprehensive Traffic Management Plan will be developed in consultation with appropriate experts and regulators.

#### Consultation with County and State Transportation Agencies

##### *County Public Works Department:*

Representatives of the Applicant met with County Public Works Director Paul Bennett on October 14, 2003 to discuss the location of the Project and any potential concerns in terms of potential impacts on County facilities such as roads. Mr. Bennett requested assurance that the Applicant would agree to mitigate for any impacts that might occur to County roads (primarily Vantage Highway) from construction traffic and requested confirmation that the Project would not interfere with any existing or proposed approaches or protected airspace for the Ellensburg Airport (Bowers Field). Mr. Bennett indicated he would prefer to wait for the permit application to be filed before conducting a detailed review of the potential issues associated with the Project.

##### *WSDOT:*

The Applicant has consulted with Mr. Rick Holmstrom, Development Services Engineer for the Washington Department of Transportation regional office in Union Gap regarding potential impacts of the Project on state highways. Mr. Holmstrom has indicated that the only road under state jurisdiction that would potentially be affected by the Project is I-90, and that impacts to I-90 are anticipated to be minimal.

#### Vehicular Traffic- Existing Roads, Estimated Volumes, Types, and Routes

The Project construction period requiring the transportation of major equipment and constituting the highest amount of construction traffic will span approximately 6 months. It is anticipated that approximately half of the construction workers will access the site from within 40 miles of the Project. These local workers will most likely be from Ellensburg, Yakima, or the surrounding area. It is anticipated that the other half of the construction workers will be non-local, originating from the Seattle area (approximately 125 miles to the west). See Section 3.12, 'Population, Housing, and Economics' for information on the construction workforce.

Vantage Highway will be most utilized as a primary roadway to and from the Project site. As the primary access route to the site, this roadway will likely have the greatest impact from the construction vehicles and workers. Workers from the Seattle area will most likely travel east on I-90, north, from exit 115, through the City of Kittitas, and continue east on Vantage Highway to access the Project site. Workers from the Yakima area will travel north on US 82 and east on I-90 to the Kittitas exit where they will continue on the access route previously mentioned. These are the shortest and most direct routes from the surrounding major urban areas.

Trucks will be used to deliver construction equipment and materials. Some of these trucks will have a gross vehicle weight above 105,500 pounds. Any oversize or overweight vehicles will comply with state requirements. Because the surface condition of the pavement near the Project site is built to WSDOT standards and is of good

bituminous or asphalt quality, the delivery of construction materials and equipment is not expected to degrade existing conditions.

The wind turbines, towers, transformers and other large equipment will be transported to the site using semi-truck and lowboy trailers designed for heavy loads (i.e., multiple axles). The trucks will deliver the equipment to the Project site. Movement of the transporters will have short-term impacts on traffic along Vantage Highway and other roadways used along the transporter routes.

Construction is anticipated to commence during April, 2005. There will be an on-site workforce of about 160 workers during the peak month of construction as described in Section 2.2.6 'Project Construction Schedule and Workforce'. The average workforce for the remaining months of construction will be about 90 workers. During the peak construction period, construction workers will generate an estimated 214 daily trips (assuming one third of the workforce will carpool to the site), 107 of which will occur during the evening peak hour. These construction worker trips will consist of light duty vehicles, which will travel on Transporter Route 1 through the City of Kittitas.

Construction-related traffic increases will consist of deliveries of Project equipment and construction materials (such as water and steel) by truck. Truck deliveries are anticipated to occur between approximately 8 a.m. and 4:30 p.m. on work days. In total, 25,789 heavy duty truck deliveries are expected during the construction period. Approximately 1,340 of these truck deliveries are oversized or overlength and must travel on Transporter Route 2 through Vantage to access the site. The remaining trucks may travel on Transporter Route 1 through the City of Kittitas. Assuming 96 work days (4 busiest months at 24 workdays per month), this would result in approximately 255 trucks (or 510 truck trips) per day on Transporter Route 1. This equates to 128 truck trips during the peak hour on Transporter Route 1, assuming a very conservative estimate that 25% of the 510 total truck trips will actually occur within the peak. A conservative estimate was assumed in order to show the possible effects on capacity. Similarly on Transporter Route 2, there will be 14 trucks per day, which equates to 28 truck trips, or 7 trucks during the peak hour. The estimated maximum number of truck trips per day during this peak period is approximately 383 trucks, or 766 truck trips, using currently available construction estimates.

In addition to worker traffic and heavy duty construction vehicles, there will be an estimated 30 light duty delivery trucks daily for the peak of the construction period, resulting in 60 daily trips. These light duty vehicles will travel on Transporter Route 1 through the City of Kittitas. Similar to heavy construction deliveries, light duty delivery trips will not all occur within the peak hour. Assuming that 25% of all light duty delivery trips will occur within the peak hour, 15 truck trips will occur on Transporter Route 1.

Transporter Route 1 will experience an additional 250 peak hour trips during the peak of construction (107 worker trips, 128 heavy duty delivery trips, and 15 light duty delivery trucks). Transporter Route 2 will experience very little additional construction traffic at only 7 peak hour trips.

It is anticipated that truck deliveries will include:

- Major equipment (e.g. tower sections, nacelles, blades);
- Water trucks for road wetting during compaction and for dust control;
- Fuel trucks for replenishing diesel and gasoline storage tanks;
- Cement, sand and aggregate for use in concrete foundations and trench shading;
- Construction equipment delivery and pickup;
- Reinforcing steel;
- Mechanical equipment;
- Electrical equipment and material (transformers, cable, etc.);
- Miscellaneous steel, roofing, and siding;
- Construction consumables;
- Contractor mobilization and demobilization.

Table 3.15.2-2 provides a summary of PM peak hour traffic and LOS during the construction time period of the Project. The LOS during construction assumes that construction traffic is added to the heavier directional split of background traffic for conservative impacts.

The construction LOS during the PM peak hour with construction worker traffic and delivery traffic causes the transporter routes to operate at LOS C or better. It is anticipated that the LOS C on Main Street and the LOS B on I-90 west of the City of Kittitas will return to operating at existing conditions once the Project is complete.

**Table 3.15.2-2: Total PM Peak Hour and LOS Construction Impacts to the Roadways**

Roadway	No. of Lanes	2004 Base ADT	2004 PM Peak	Construction Worker Traffic	Construction Traffic	Total PM Peak	LOS
<b>Transporter Route 1</b>							
I-90 (West of Kittitas)	4	15,300	842*	107	150	1,099	B
Main Street	2	2,040	306	107	143	556	C
No 81 Road	2	1,326	199	107	143	449	A
Vantage Highway	2	1,169	175	107	143	425	C
<b>Transporter Route 2</b>							
I-90 (West of Vantage)	4	11,220	617*	0	7	624*	A
Vantage Highway	2	1,530	230	0	7	237	C

**Table 3.15.2-2: Total PM Peak Hour and LOS Construction Impacts to the Roadways**

*\* Freeway PM Peak volumes are directional.*

*Source: Washington State Department of Transportation, 2002.*

The LOS table 3.15.2-2 above was based on an upper-limit scenario in which all gravel needed for construction on-site would be transported to the Project location from off-site. Therefore, this is a conservative estimate of truck trips. The Applicant intends to utilize on-site gravel quarries at the Project location to supply construction gravel. These on-site gravel quarries would significantly reduce the number of heavy vehicles accessing the site, thereby improving traffic operations. Heavy duty truck deliveries are reduced by 15,092 vehicles over the construction period when on-site gravel quarries are utilized. Table 3.15.2-3 below shows that with on-site facilities (100% gravel on-site) vehicle trips are reduced by 79 vehicles in the peak hour on Transporter Route 1 as compared with gravel coming from off-site.

A 60/40 directional split was assumed for level of service calculations for the existing traffic scenarios. This split was updated accordingly in the HCS analysis, assuming that peak hour construction traffic would be added in the peak direction. Truck percentage was also updated in the HCS analysis.

With an on-site quarry, a total of 10,697 heavy duty truck deliveries are expected during the construction period. Approximately 1,340 of these truck deliveries are oversized or over length and must travel on Transporter Route 2 through Vantage to access the site. The remaining trucks may travel on Transporter Route 1 through the City of Kittitas. Assuming 96 work days (4 busiest months at 24 workdays per month), this would result in approximately 98 trucks (or 196 truck trips) per day on Transporter Route 1. This equates to 49 truck trips during the peak hour on Transporter Route 1, assuming 25% of the 196 total truck trips will actually occur within the peak. Similarly on Transporter Route 2, there will be 14 trucks per day, which equates to 28 truck trips, or 7 trucks during the peak hour.

Transporter Route 1 will experience an additional 171 peak hour trips during the peak of construction (107 worker trips, 49 heavy duty delivery trips, and 15 light duty delivery trucks). Transporter Route 2 will experience very little additional construction traffic at only 7 peak hour trips.

**Table 3.15.2-3: Effect of On-Site Gravel Quarry on Construction Impacts**

Roadway	2004 PM Peak	0% Gravel On-Site		100% Gravel On-Site	
		Worker and Truck Traffic	LOS	Worker and Truck Traffic	LOS
<b>Transporter Route 1</b>					
I-90 (West of Kittitas)*	842	1,099	B	1,020	B
Main Street	306	556	C	477	C
No 81 Road	199	449	A	370	A

**Table 3.15.2-3: Effect of On-Site Gravel Quarry on Construction Impacts**

Vantage Highway (West of site access)	175	425	C	346	C
<b>Transporter Route 2</b>					
I-90 (West of Vantage)*	617	624*	A	624	A
Vantage Highway (East of site access)	230	237	C	237	C

\* Freeway PM Peak volumes are directional.

Source: Washington State Department of Transportation, 2002.

Later in the project development process, when a turbine type and construction contractors have been selected, the Applicant will work with a transport company to determine construction vehicle specifics. The largest type of transport vehicles used for the Project would carry the nacelles and the turbine blades. The nacelle transport truck would be approximately 110 feet in length and weigh approximately 280,000 pounds. The blade transport truck would be approximately 160 feet in length and weigh approximately 155,000 pounds. It is estimated that 5-10 nacelles and 5-10 sets of turbine blades would arrive each week at the site via truck.

#### Road Improvements and Maintenance

There are no anticipated improvements to existing roads, intersections, or roadway approaches that will be used for construction or operation of the facility. If potential improvements become necessary, Kittitas County Roadway Design Standards and WSDOT Design Standards will be implemented.

Construction and operation of the Project is not anticipated to require maintenance and repair beyond that which is regularly scheduled by the State or County. As discussed above in Section 3.15.1.3, 'Truck Volumes and Routes, Weight and Load Limitations', maintenance or repairs that are required will return roadways to pre-Project conditions as documented in the video log. Public roadways will continue to be maintained by the State or County. Roadways on the Project site will be maintained by the Applicant. Access trails for the transmission feeder line(s) will be maintained by the Applicant and/or the interconnecting utility (PSE and/or BPA).

#### Air Navigation Considerations

The Applicant intends to file a 'Notice of Construction or Alteration' with the regional FAA office in Renton, WA to initiate the "7460" review process. Applicant will provide a copy to EFSEC once a final determination is made.

After a determination by the FAA is made, Applicant intends to submit a revised 'Notice of Proposed Construction or Alteration' as necessary to the FAA based on the final, approved Project site layout and proposed turbine size and will comply with all requirements of the FAA. The FAA's aeronautical studies state that, for certain turbines, a 'Notice of Actual Construction or Alteration' (FAA form 7460-2) be submitted within 5 days after the construction reaches its greatest height. The Applicant will submit a



‘Notice of Actual Construction or Alteration’ (FAA form 7460-2) for all structures for which the FAA has required them in accordance with the required timeline, as necessary.

#### Parking during Construction

During construction, parking will be located at the site of the O&M facility and along the site access roads. The O&M facility site will also serve as a construction staging area. Dust control will be implemented as needed to minimize fugitive dust. Personnel working on turbine foundations, electrical infrastructure and turbine erection will park along turbine string roads. Because vehicles will park in areas that are already temporarily or permanently disturbed for other construction purposes, no additional ground disturbance is anticipated for parking needs. It is anticipated that roughly half of all construction worker vehicles will be parked at the O&M facility location and the other half will be dispersed across the various turbine strings. With a peak workforce of 160 people, the maximum number of worker vehicles anticipated at any one time is 107, assuming that efforts to encourage carpooling will result in about one third of construction workers carpooling to and from the Project site. In terms of acreage necessary for parking, the upper-limit scenario (assuming no carpooling) would require less than 2 acres for parking. The Applicant has used 2 acres for estimating Project acreage and habitat impacts associated with vehicle parking. Section 2.2.6, ‘Project Construction Schedule and Workforce’ contains tables summarizing estimates for numbers of workers by work elements and time frames.

#### Transportation of Hazardous Materials

As described in Section 3.16, ‘Health and Safety’, diesel fuel is the only potentially hazardous material that will be used in any significant quantity during construction of the Project. During construction, fuel-tanker trucks will be used for the refueling of fuel-storage tanks on site. The fuel-tanker trucks will be properly licensed and professionally driven and will incorporate appropriate design features such as overflow prevention devices and fixed couplings to prevent accidental spills. Operating procedures to prevent and contain any accidental spills resulting from fuel transportation and transfer are described in detail in Section 3.16, ‘Health and Safety’. Construction of the Project will not result in the generation of any hazardous wastes in quantities regulated by state or federal law.

Potentially hazardous materials that will be transported to the site during construction include lubricating oils, cleaners, and herbicides in quantities below state and federal regulatory thresholds. Transportation of these materials will be conducted in a manner that is protective of human health and the environment and in accordance with applicable federal and WSDOT requirements.

#### Traffic Hazards

It is anticipated that the overall accident rate or pattern would be similar to existing conditions.

A Traffic Management Plan will be submitted to EFSEC for review prior to the startup of construction, and that plan will include measures to minimize impacts of construction-related traffic and to minimize hazards during construction.

Traffic generated by the construction or operation of the Project is not anticipated to affect the accident rate on roadways that are part of the Transporter Routes. Accident rates are based on average daily traffic volumes, which will not be affected by Project-related traffic. (Project-related traffic is a minimal addition to ADT.) See Section 3.15.1.5 ‘Accident Rates’ for a qualitative description of sight distance at the Project site entrance intersection, which is located across from the entrance to the Rye Grass Landfill. There are no anticipated sight distance safety issues. There are no crests in the roadway, winding geography, or steep side slopes to obstruct vision to the site entrance intersection. This intersection also has adequately widened shoulders that may be beneficial to vehicles turning into and out of the site. The area will be adequately signed for construction traffic.

### 3.15.2.2 Operation

#### Vehicular traffic

The Project will operate continuously (24 hours per day, 7 days per week) using an automated monitoring system. It will also employ an estimated 14 to 18 full time workers who will staff the Project during core operating hours. The operations crew will normally work 8 hour days Monday through Friday, with additional hours on weekend shifts as required. This equates to a maximum of 36 trips a day, or 18 trips during the peak hour. It is anticipated that nearly all of the operations workers will reside within 30 miles of the Project site, most likely Ellensburg or the surrounding area. These operations workers will access the site in the same manner as described for construction workers above in Section 3.15.2.1 ‘Construction’. It is anticipated that Project operations crews will drive light trucks and vans on site to perform maintenance and supervision activities.

Traffic between the O&M facility and the individual turbines will be light during operations. Besides any trips by operation crews, scheduled maintenance is normally performed only every 6 months on each turbine. The Applicant will be responsible for maintenance of turbine string access roads, access ways, and other roads built or improved by the Applicant to construct and operate the Project.

Table 3.15.2-4 below describes current and future traffic volumes and LOS during the operation phase of the Project, including traffic volumes from the generation plant site, assuming a 30-year Project life. Future year 2034 background volumes were estimated using a 1 percent growth factor. This growth factor is considered reasonable because of the area’s rural nature. As shown in Table 3.15.2-4, all roadways will operate at LOS C or better during evening peak conditions.

***Table 3.15.2-4: Future Peak-Hour Roadway Segment Traffic Volumes and LOS with and without Project Impacts***

	<b>2004 PM Peak without Project</b>	<b>2004 PM Peak with Project</b>	<b>2034 PM Peak without Project (Horizon Year)</b>	<b>2034 PM Peak with Project (Horizon Year)</b>

Roadway	Traffic	LOS	Traffic	LOS	Traffic	LOS	Traffic	LOS
<b>Transporter Route</b>								
I-90 (West of Main Street)	842	A	860	A	1,089	B	1,107	B
No 81 Road	306	B	324	B	396	B	414	C
Vantage Highway (West of site access)	199	A	217	A	257	A	275	A
	175	C	193	C	227	C	245	C
<b>Transporter Route</b>								
I-90 (West of Vantage Highway)	617	A	617	A	799	A	799	A
(East of site access)	230	C	230	C	297	C	297	C

*\* Freeway PM Peak volumes are directional.*

*Source: Washington State Department of Transportation, 2002.*

A 60/40 directional split was assumed for level of service calculations for the existing traffic scenarios. This split was updated accordingly in the HCS analysis, assuming that peak hour operations traffic would be added in the peak direction. Truck percentage was also updated in the HCS analysis.

Maintenance trails for the transmission feeder line(s) will be privately owned and located on the Project site and along the feeder line(s). Maintenance roads for turbines will be the same turbine string roads used for Project construction. A detailed maintenance schedule has not been determined, therefore the expected frequency of use of maintenance roads can not be reported. There will be no uncontrolled public access to Project facilities on privately owned land during construction, operation or decommissioning of the Project.

#### Parking

During the operational phase, parking will be at the O&M facility parking lot. With an anticipated operations workforce of 14 to 18 people, plus occasional guests and visitors, delivery vehicles, etc. no more than 30 vehicles are expected to be parked at the facility at any one time. The permanent parking area at the O&M facility will be graveled to reduce dust and soil erosion.

#### Transportation of Hazardous Materials

Hazardous materials to be transported to the site during operation include lubricating and mineral oils, cleaners, and herbicides in quantities below state and federal regulatory thresholds. Transportation of these materials will be conducted in a manner that is protective of human health and the environment and in accordance with applicable federal and WSDOT requirements.

No substantial quantities of industrial materials will be brought onto or removed from the Project site during Project operations. The only materials that will be brought onto the site will be those related to maintenance and/or replacement of the Project facilities (e.g., nacelle or turbine components, electrical equipment). The only materials that will be removed from Project facilities will be those parts or materials replaced during

maintenance activities. Those materials removed or replaced will not constitute a significant amount.

#### *Traffic hazards*

Traffic generated by the operation of the Project is not anticipated to affect the accident rate on roadways that are part of the Transporter Routes. Accident rates are based on average daily traffic volumes, which will not be affected by Project-related traffic. (Project-related traffic is a minimal addition to ADT.) See Section 3.15.1.5, 'Accident Rates' for a qualitative description of sight distance at the Project site entrance intersection.

Although the additional vehicular and construction traffic attributable to the Project could increase the risk of accidents, it is anticipated that the overall accident rate or pattern would be similar to existing conditions.

Roadway grades on the Transporter routes currently do not exceed 8% so no means to ensure access are necessary on State or County roads. In the event that on-site maintenance roads exceed 8% grade, safety precautions and adequate all-terrain vehicles will be used during inclement weather.

#### *Air navigation Considerations and Lighting*

To respond to the Federal Aviation Administration's (FAA) aircraft safety lighting requirements, the Project will be marked according to guidelines established by the FAA. Section 3.11.3.3, 'Operations - Turbine Lighting', describes details of FAA requirements and anticipated Project lighting plans.

### **3.15.3 Comparison of Impacts of the Proposed Scenarios**

Under the different design scenarios, there is no significant change to the construction schedule or associated impacts on ADT volumes, LOS values, accident rates or roadway conditions. This is because the road, underground trench, and overhead collector line lengths are unchanged under each scenario. It is also because the Large WTG Scenario requires larger foundations for a smaller number of WTGs while the Small WTG Scenario requires excavation of smaller foundations for a larger number of WTGs. Therefore, the materials requirements are substantially similar under each scenario. The number of construction vehicles on site is substantially similar under each scenario. The number of total truck deliveries is reduced by 14% under the Large WTG Scenario and reduced by 7% under the Small WTG Scenario.

### **3.15.4 Impacts of the No Action Alternative**

Under the No Action Alternative, the Project would not be constructed or operated, and the environmental impacts described in this section would not occur. The No Action Alternative assumes that future development would comply with existing zoning

requirements for the Project area, which is zoned Commercial Agriculture and Forest and Range. According to the County's zoning code, the Commercial Agriculture zone is dominated by farming, ranching, and rural lifestyles, and permitted uses include residential, green houses and agricultural practices. Permitted uses in the Forest and Range zone include logging, mining, quarrying, and agricultural practices, as well as residential uses (Kittitas County 1991). However, if the proposed Project is not constructed, it is likely that the region's need for power would be addressed by user-end energy efficiency and conservation measures, by existing power generation sources, or by the development of new renewable and non-renewable generation sources. Baseload demand would likely be filled through expansion of existing, or development of new, thermal generation such as gas-fired combustion turbine technology. Such development could occur at conducive locations throughout the state of Washington.

A baseload natural gas-fired combustion turbine would have to generate 67 average MW of energy to replace an equivalent amount of power generated by the Project (204 MW at 33% net capacity). (An average MW or "aMW" is the average amount of energy supplied over a specified period of time, in contrast to "MW," which indicates the maximum or peak output [capacity] that can be supplied for a short period.) See Section 2.3, 'Alternatives'.

### **3.15.5 Mitigation Measures**

No significant unavoidable adverse impacts on traffic and transportation are associated with construction or operation and maintenance of the Project. However, the Applicant has proposed specific mitigation measures for Project construction as described below.

#### **3.15.5.1 Construction**

During construction, roadways and intersections in the vicinity of the Project site will provide an acceptable level of passage for traffic, even during the evening peak periods. However, the following mitigation measures are proposed to further reduce the impact of Project construction on roadway traffic in the region:

- The Applicant will prepare a Traffic Management Plan (to be submitted to EFSEC prior to construction for review) with the construction contractor outlining steps for minimizing construction traffic impacts;
- The Applicant will provide notice to adjacent landowners when construction takes place to help minimize access disruptions;
- The Applicant will provide proper road signage and warnings of "Equipment on Road," "Truck Access," or "Road Crossings;"
- When slow or oversized wide loads are being hauled, advance signage and traffic diversion equipment will be used to improve traffic safety. Pilot cars will be used as the DOT dictates, depending on load size and weight;
- The Applicant will construct necessary site access roads and an entrance driveway that will be able to service truck movements of legal weight;

- The Applicant will encourage carpooling for the construction workforce to reduce traffic volume;
- In consultation with Kittitas County, the Applicant will provide detour plans and warning signs in advance of any traffic disturbances;
- The Applicant will employ flaggers as necessary to direct traffic when large equipment is exiting or entering public roads to minimize risk of accidents;
- Where construction may occur near the roadway, one travel lane will be maintained at all times.

#### **3.15.5.2 Operation**

Because Project operation and maintenance will not significantly affect traffic and transportation, no mitigation is proposed.

#### **3.15.6 Significant Unavoidable Adverse Impacts**

No significant unavoidable adverse impacts on traffic and transportation are associated with construction of operation and maintenance of the Project.